



CH2M Hill Hanford Group (CHG)
Mobile Retrieval System (MRS)
Personnel Contamination Event

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Introduction



- Background
- Focus of Investigation
- Key Factors
- Enforcement Action Outcome

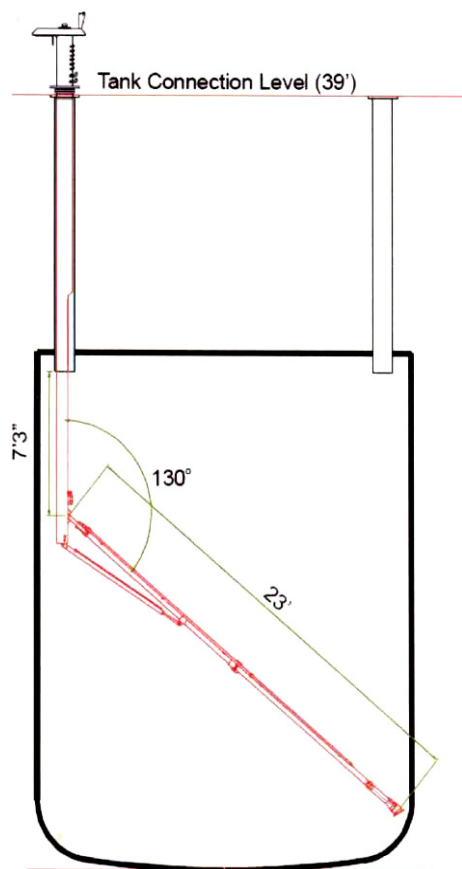


Background



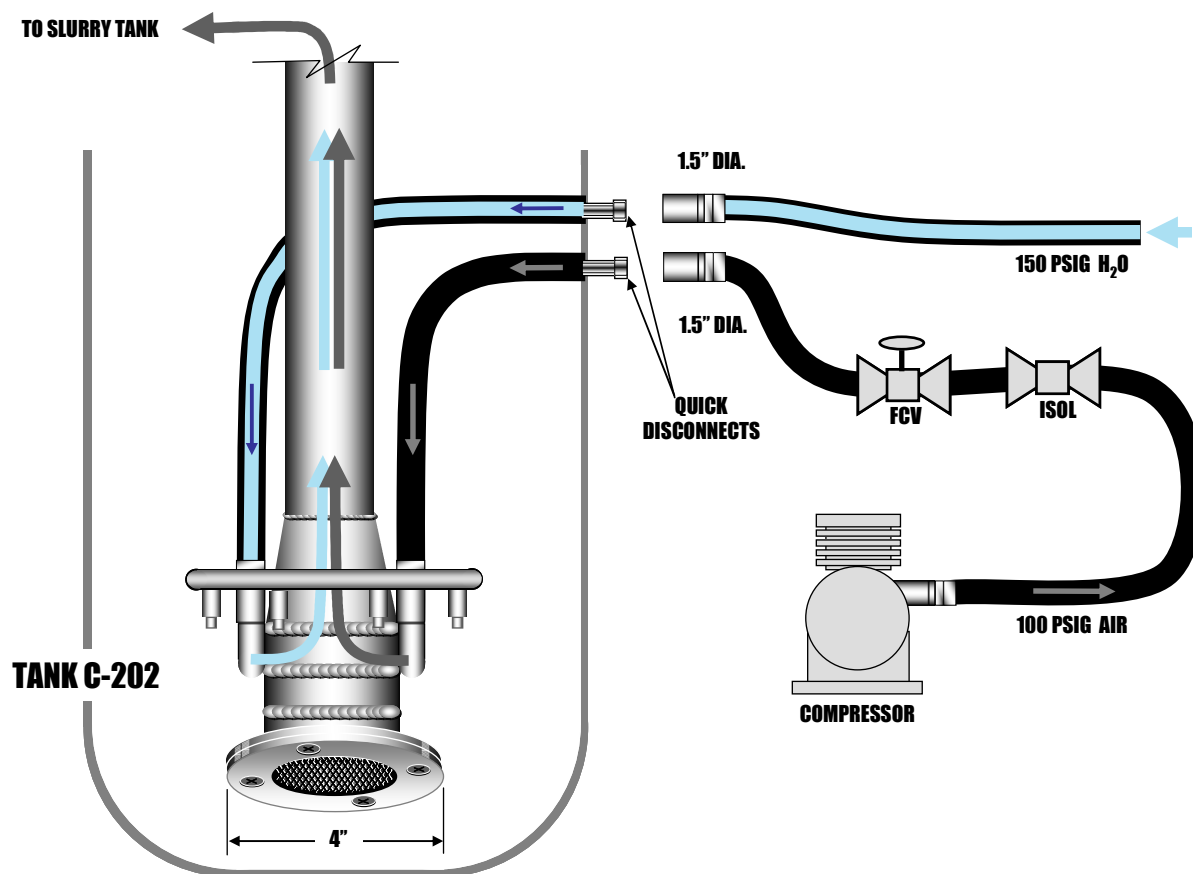
September 2005 MRS Contamination Event

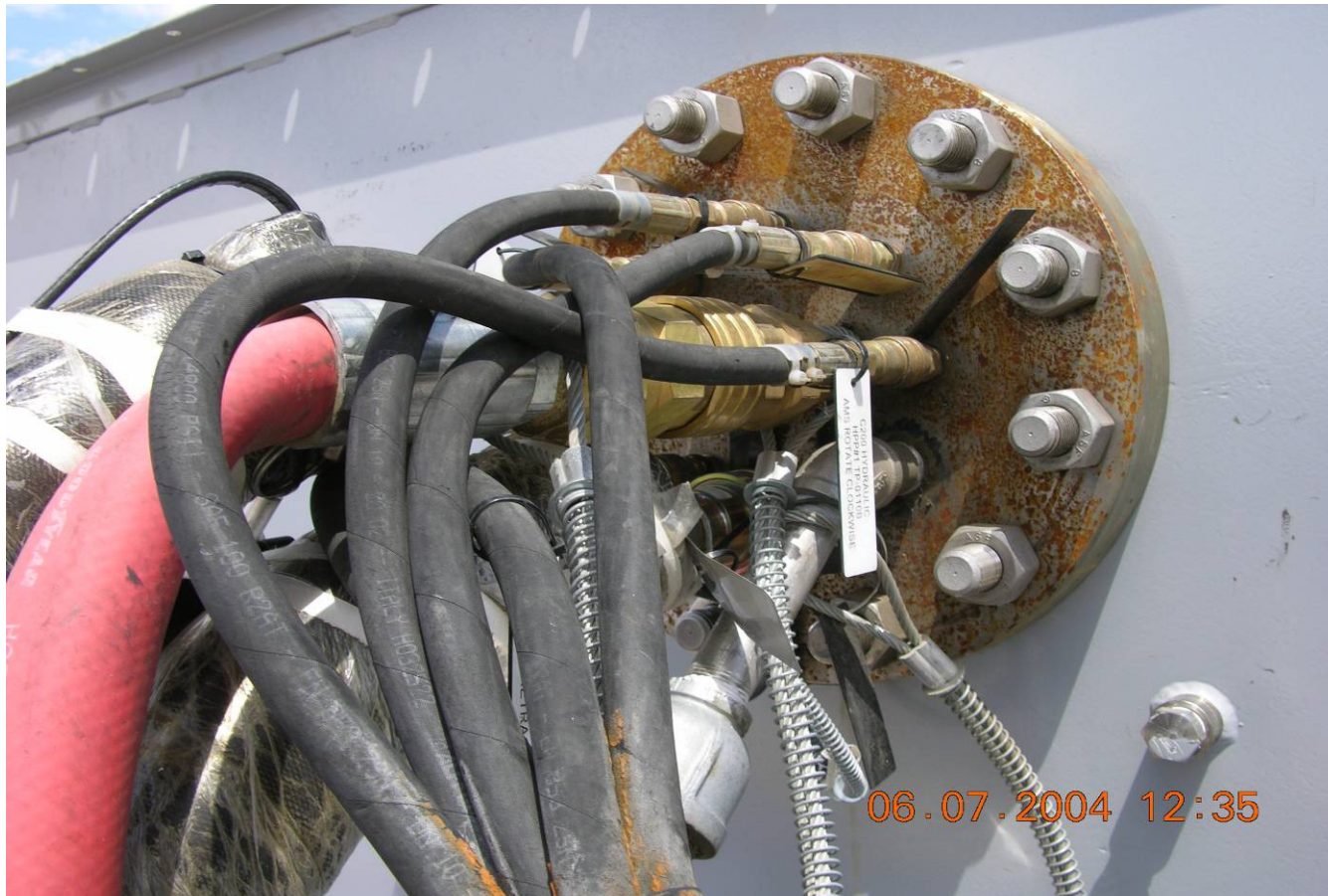
- Overview of Tank Sludge Removal and MRS Operations
- Modified Operations Result in an Unanticipated Plugged and Pressurized Support Air Line
- Pressurized Air Line During MRS Removal Results in Spraying and Contamination of Workers

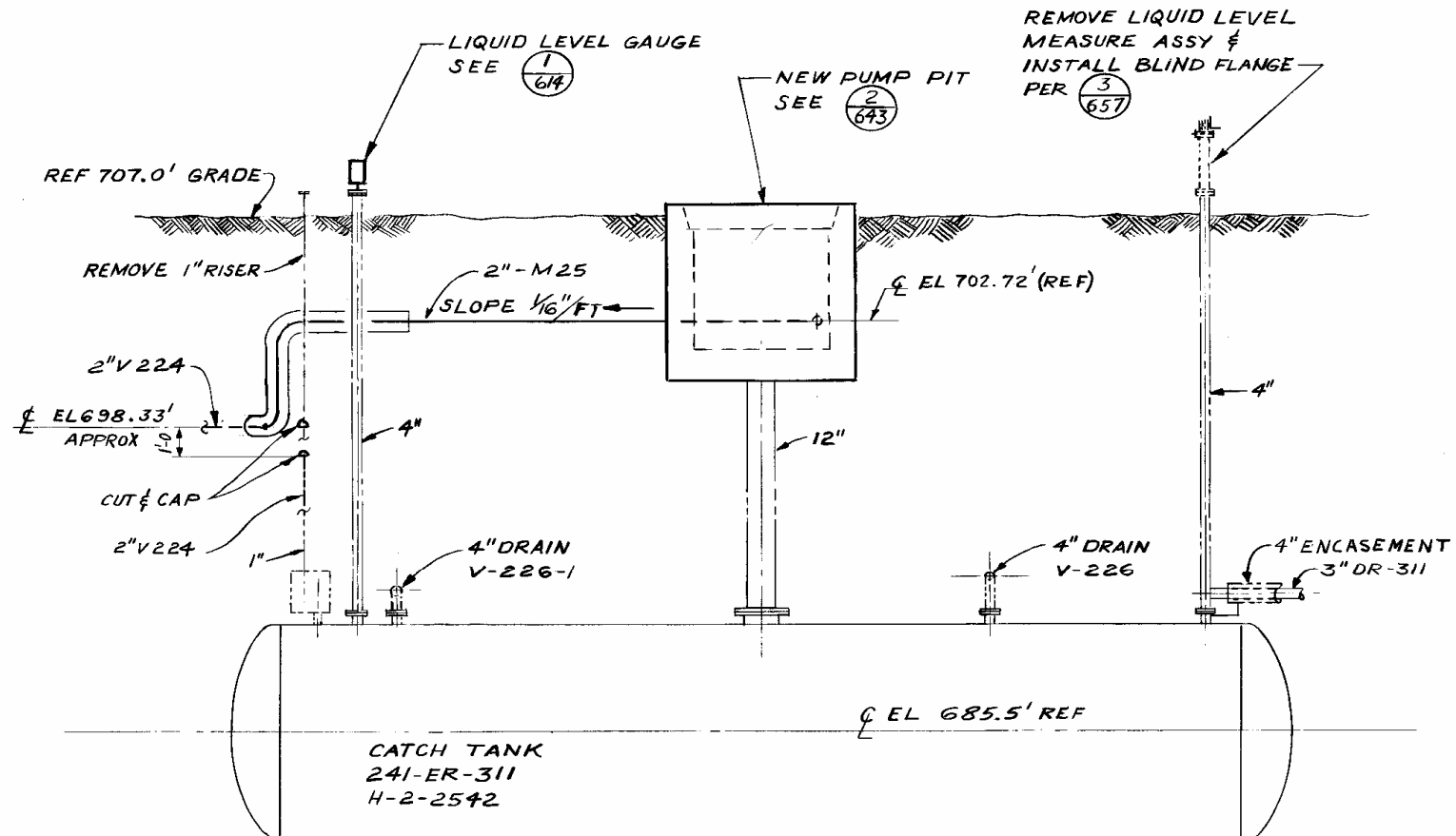


Mast Head Details











Background (*cont'd*)



Prior and Current Performance Concerns

- Prior March 2005 Enforcement Action Involved:
 - Radiological Contamination and Exposure Events
 - Quality Improvement Violations

- Subsequent 2006 Radiological Events:
 - January 2006 Pump Pull Event
 - February 2006 Soil Removal Event
 - March 2006 ER-311 Camera Removal Event



Investigation Focus

- Radiological Control Deficiencies:
 - Hazard Identification and Control
 - Operations Change Control
 - Response to Abnormal Conditions
- Failures of Emergency Response Equipment
- Quality Improvement Deficiencies –Prior and Subsequent Events



Key Factors - MRS

- Inadequate MRS Hazards Analysis and Control
 - Waste migration into support lines not addressed
 - No controls established for breaching of the system
- The known clogging of the support air line was not evaluated and dispositioned prior to MRS removal
- No methods were established to control open tank and line pathways (subsequent to system removal)



Key Factors – MRS



- Area Emergency Response Equipment Deficiencies
 - Decontamination sink inoperable
 - Decontamination shower drain lines mis-aligned resulting in contamination spread
 - Change tents lacked required response/spill kits
 - Area emergency response vehicle out of service with no backup replacement



Key Factors – ER 311



- Inadequate Hazards Analysis and Control
 - Tank ER-311 contamination levels not fully evaluated
 - Containment sleeving not used to control exposed and contaminated camera surfaces
- Swipes and surveys during camera removal operations not effectively implemented to control work
- Inadequate standards and procedures for tank equipment removal operations



Key Factors – QI



Quality Improvement (QI)

- Recurring radiological events (2004 – 2006)
- Common deficiencies involving CHG's process for analyzing and controlling radiological hazards with work activities
- CHG corrective actions and improvement initiatives still underway at time of more recent events
- Improvements noted in CHG causal analysis and corrective actions with recent events



Enforcement Action



- Three Severity Level II ALARA Violations – MRS, Emergency Response Equipment Deficiencies, and ER-311 Camera Removal.
- Deferred action on the quality improvement noncompliances:
 - To allow for corrective action implementation
 - Reevaluate CHG performance in six months



Enforcement Action/Civil Penalty Trends

Tony Weadock
Office of Enforcement



Introduction



- **Enforcement Actions**
- **Civil Penalties**
- **Comparison with other Enforcement Agencies**



Enforcement Actions



- **101 Enforcement Actions Issued (2006)**

 - 29 SL-I

 - 266 SL-II

 - 56 SL-III

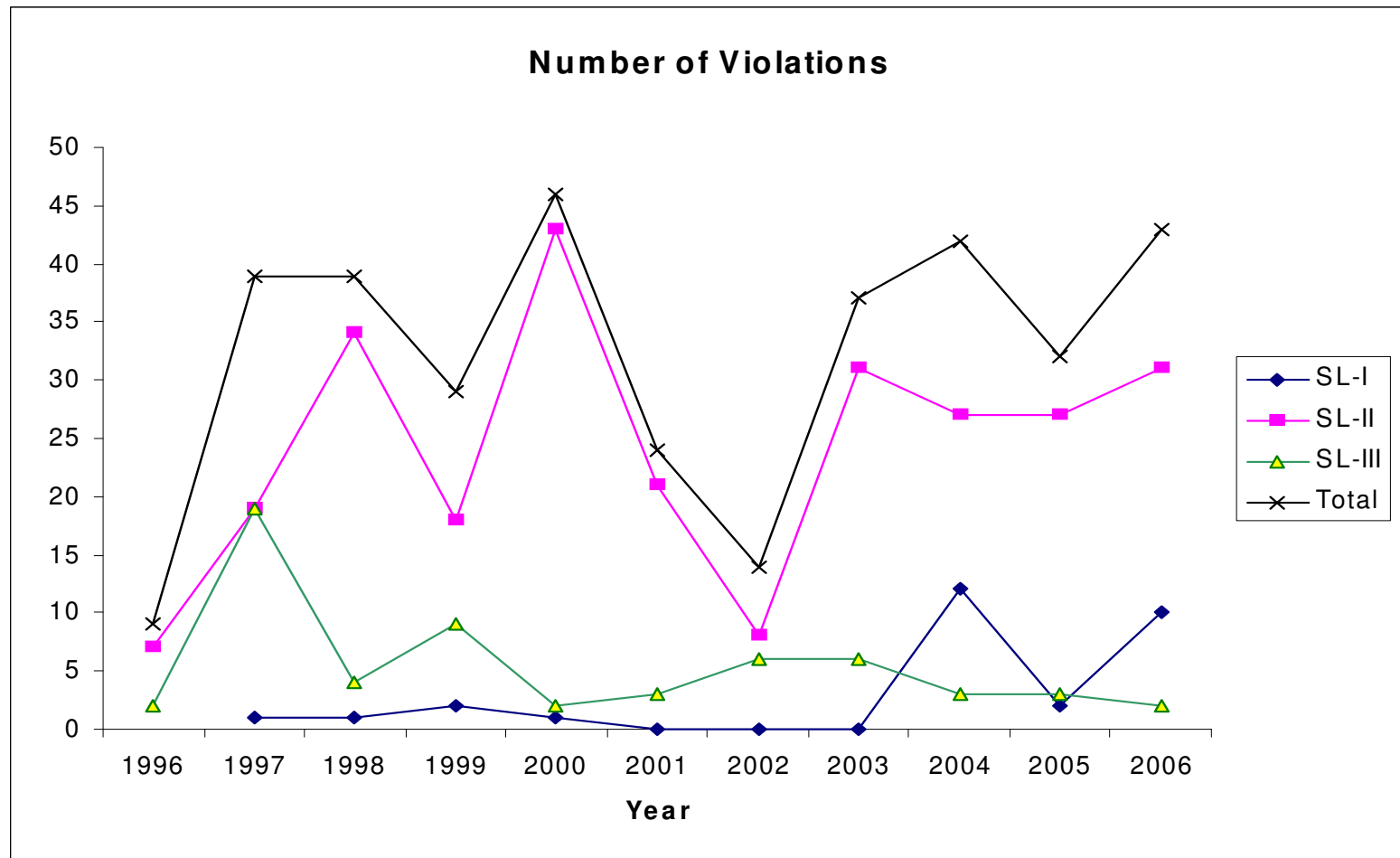
 - 1 Compliance Order

 - 6 Consent Orders

- **58 imposed civil penalties = \$8,560,375**

- **19 civil penalties waived totaling \$5,704,125**

- **18 enforcement actions with no civil penalty**





Civil Penalties



➤ **Largest Civil Penalties**

- 2000 \$1,045,000 (19 SL-II)
- 2004 \$ 935,000 (5 SL-I, 3 SL-II)
- 2004 \$ 770,000 (7 SL-I)
- 2006 \$1,100,000 (5 SL-1, 10 SL-II)

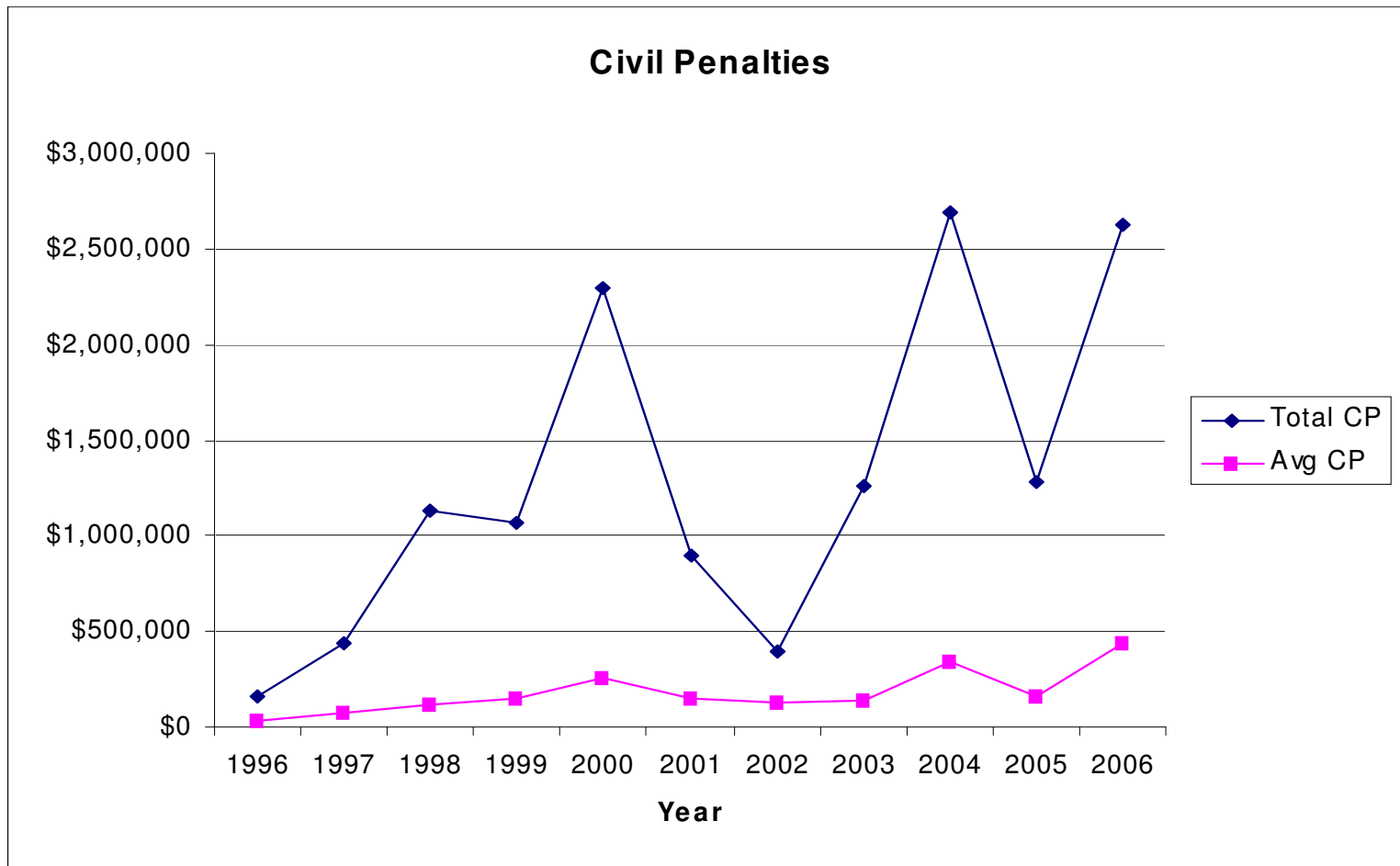
➤ **2004 first use of “Per Day” escalation**



Civil Penalties



- **Yearly total civil penalty has increased**
- **Average civil penalty per enforcement action has also increased**
- **Factors**
 - Base civil penalty changed from facility to severity level
 - Maximum base civil penalties increased to \$110,000
 - Number of SL-I violations increasing
 - Per day escalation





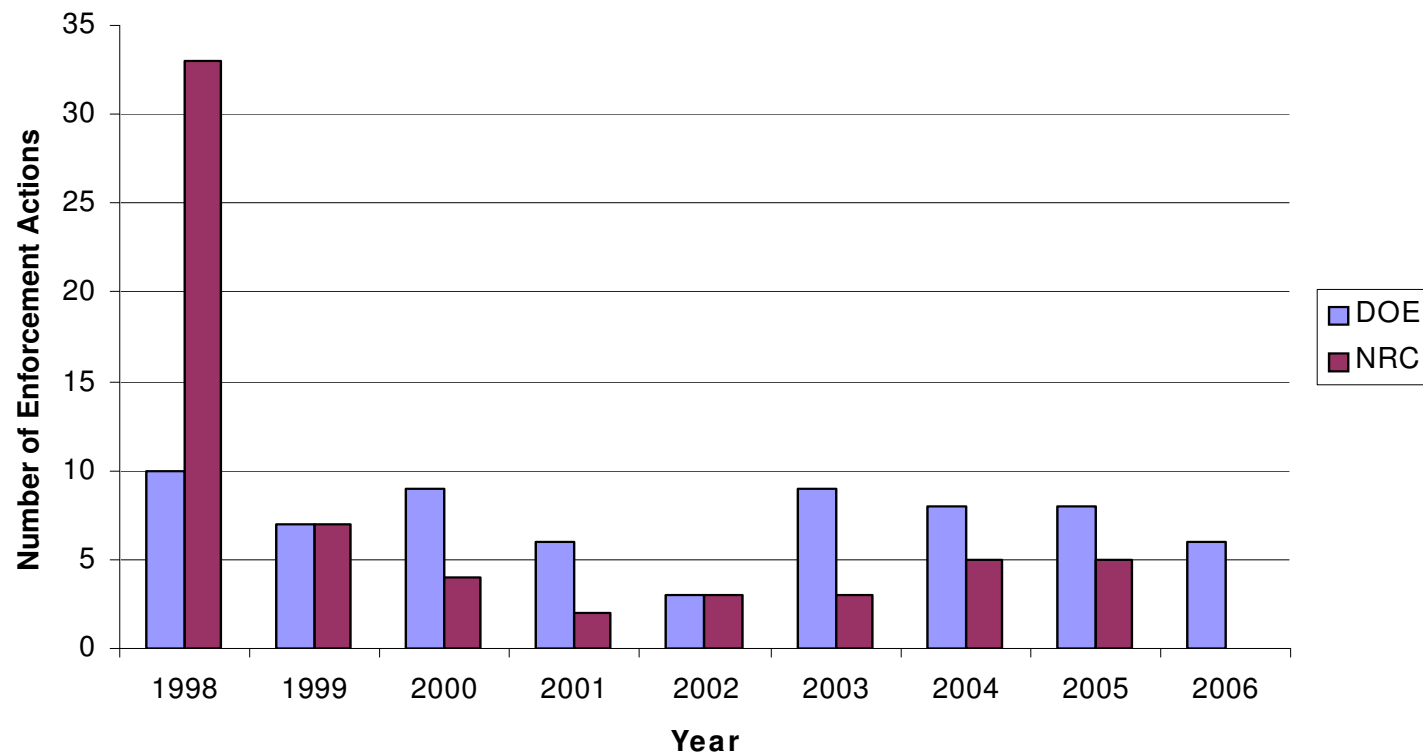
Comparison with other Enforcement Agencies



- **DOE is generally comparable to NRC in number of enforcement actions per year (except 1998)**
- **DOE has an equal or higher average civil penalty per enforcement action than NRC (except 1998 and 2005)**
 - 1998 NRC 1 EA = \$2,210,000
 - 2005 NRC 1 EA = \$5,450,000
- **DOE exceeds the average OSHA (willful) and EPA (Region 5) civil penalty**



Enforcement Actions With Civil Penalty





Comparison of Enforcement Agency Civil Penalties



	DOE	NRC	OSHA	EPA (Region 5)
	Avg CP/EA	Avg CP/EA	Avg Willful	Avg Penalty
1998	\$113,500	\$ 154,992		\$76,957
1999	\$153,214	\$ 139,000	\$35,902	\$61,379
2000	\$255,139	\$ 99,000	\$36,487	\$53,605
2001	\$148,958	\$ 55,000	\$25,106	\$21,216
2002	\$132,917	\$ 130,333	\$26,888	\$98,373
2003	\$140,556	\$ 60,000	\$31,763	
2004	\$336,875	\$ 58,400	\$29,908	
2005	\$160,531	\$1,126,250	\$43,294	
2006	\$438,167			



Comparison of Enforcement Civil Penalties

